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PETROGRAPY.[1]

In a long and extensive article, Mügge[2] treats of the keratophyres of the Lennethal in Westphalia, and the neighboring regions, and their tuffs. The rocks have been considered as fragmental schists by some observers and as squeezed eruptives by others. They are known generally as the Lenneporphyries. Mügge finds that some of them are genuine eruptives and some are the tuffs of these. The massive rocks are keratophyres and quartz-keratophyres, sometimes carrying large phenocrysts of quartz and feldspar and at other times free from these. The groundmass of the keratophyres is made up of bleached biotite, sericite, feldspar, opal and glass, with traces of spherulitic structure. Schistose varieties of the quartzose varieties have become foliated through pressure, as shown by the fractured quartzes and feldspars that occur so abundantly in them, the presence of lenticular areas of quartz mosaic and the greater abundance of sericite. The most characteristic of the lenneporphyries are tuffs in which the ash structure is very well exhibit. The typical tuff structure is described by the author as due to the accumulation of glass particles with concave boundaries. These are mingled with complete and broken crystals of various minerals and often with sedimentary material. Rocks composed of intermingled volcanic and sedimentary fragmental material the author would call tuffites; when metamorphosed, tuffoids. Many of the rocks in the Lenne district have suffered dynamic metamorphism with the production of secondary quartz, feldspar, sericite, carbonates and chlorite. They are, therefore, tuffoids. The new material was formed partially from the decomposition of the rock's materials and partially with the aid of alkaline solutions originating outside of the metamorphised rocks.

Nepheline-Melilite Rocks of Texas.—Osann[3] finds a melilite nepheline basalt occurring as dykes in the Cretaceous of Uvalde Co., Texas, and nepheline basanites forming buttes and hills in the same region. The basalts are typical melilite varieties, containing phenocrysts of olivine and micro-porphyritic crystals of melilite with all the characteristic features of this mineral. Perofskite is a common

[1] Edited by Dr. W. S. Bayley, Colby University, Waterville, Me.

[2] Neues Jahrb. f. Min., etc. B. B. viii, p. 525.

[3] Jour. Geol., Vol. I, p. 341.

accompaniment of the melilite. The basanites have an andesitic habit and since they contain more or less sanidine, they approach phonolite in composition. Hornblendes, two monoclinic augites and nepheline are common as phenocrysts, while sanidine, plagioclase and olivine are scarce. The rock of Pilot Knob, near Austin, is a porphyritic nepheline basalt.

Eleolite Syenite from Eastern Ontario.—Adams,[4] while making a geological reconnaissance in the township of Dungannon, Ontario, discovered a large area of eleolite syenite in the Laurentian of the region. The rock is notable especially for the fresh scapolite and calcite present in it and for the fact that its feldspathic constituent is an albite. Petrographically the syenite is an aggregate of the minerals above mentioned and hornblende, biotite, sodalite, garnet and zircon. The nepheline is fresh. It occurs in large quantity, and sometimes in individuals two and a half feet in length. Its composition according to Harrington is

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	K_2O	Na_2O	Loss	Total
43.51	33.78	.15	.16	tr	5.40	16.94	.40 =	100.34

The mica is a dark yellow-brown variety. It is present in small quantities only. Hornblende is also comparatively rare. It occurs in two varieties in different specimens. One variety has a large optical angle and a pleochroism of deep green and pale yellow tints. The other is allied to arfvedsonite. It has a small axial angle, and is pleochroic in deep bluish-green and yellowish-green tints. The scapolite is in large colorless grains that are fresh and seem to be original, and the calcite in more or less rounded individuals, often included within the other constituents. The feldspar is largely albite. A small quanitity orothoclase occurs, especially associated with the sodalite. This orothoclase is thought to be secondary.[5] An analysis of the sodalite gave:

SiO_2	Al_2O_3	FeO	Na_2O	K_2O	Cl	SO_3	H_2O	Ins.	Total
36.58	31.05	.20	24.81	.79	6.88	.12	.27	.80 =	101.50

O = Cl 1.55 = 99.95.

Petrographical News.—The basic dyke material at Hamburg, Sussex Co., N. J., which was thought to be leucite tephrite by Hussak[6] and declared by Kemp[7] to be an aggregate of pyroxene, biotite and analcite has been examined at another place by the last named geologist. It has been found by him[8] to contain leucite. Hussak's determination is thus confirmed. The rock is a leucite tephrite.

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[4] Amer. Jour. Sci., 1894, XLVIII, p. 10.

[5] Cf. also Geol. Surv. of Can., Vol. VI, Pt. J.

A spherical granite from a boulder discovered on Qonochontogue Beach in Southwestern Rhode Island is described by Kemp[9] as a coarse granitite, with nodules from two to three inches in diameter scattered through it. These consist of a center of coarse plagioclase with a little quartz, surrounded by a concentric zone of biotite and magnetite, and a peripheral one of radiating plagioclase, whose laths end sharply against the granite matrix. The author explains the nodules as centers of crystallization.

The rocks that have for the past few years been called muscovadite by the Minnesota Geological Survey have recently been examined by Grant,[10] who finds among them several distinct rock types. Some of muscovadites are fine grained aggregates of pyroxene, quartz and feldspar, containing in their midst large flakes of biotite. Others are composed of quartz and biotite, etc. These are considered as contact rocks. A second class of the muscovadite comprises granulitic gabbros and norites.

The siliceous oolite of State College, Pa., is composed of radial spherules of fibrous chalcedony forming bands around fragments and rounded grains of quartz. Between the spherules are bundles of chalcedony fibres placed normal to the surface of the spherules nearest them, and intermingled with these are granular chalcedony and quartz. An oolite from the Tertiary beds of New Jersey is an aggregate of sphero-crystals of chalcedony, usually without nuclei. Occasionally a cone of fine grained quartz is to be seen, but this is rare. The matrix between the spherules is partly chalcedony and partly quartz.[11]

Duparc and Mrazec[12] refer very briefly to the mineralogical composition of an occurrence of Serpentine at Geisspfad in the Swiss Alps. The rock now contains hornblende, chromiferous diopside, diallage and some secondary substances in addition to serpentine. The rock was probably originally a Lherzolite.

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[6] Amer. Naturalist, 1893, p. 274.

[7] Ib. 1893, p. 563.

[8] Amer. Jour. Sci., XLVII, 1894, p. 333.

[9] Trans. N. Y. Acad. Sci., XIII, 1894, p. 140.

[10] 21st Ann. Rep. Minn. Survey, p. 147.

[11] E. O. Hovey: Bull. Geol. Soc. Amer., Vol. 5, p. 627.

[12] Bull. Soc. Franc d. Min., XVI, p. 210.

Phillips[13] has analyzed specimens of Pele's hair (I) and of lava stalagmites (II) from the caves of Kilauea, Hawaii, with these results:

SiO_2	Al_2O_3	Fe_2O_3	FeO	MnO	P_2O_5	CaO	MgO	Na_2O	K_2O	Total
50.76	14.75	2.89	9.85	.41	.26	11.05	6.54	2.70	.88	= 100.09
51.77	15.66	8.46	6.54	.82		9.56	4.95	2.17	.96	= 100.89

Lacroix[14] finds specimens of nepheline basalt from Saint Sandoux, Puy-de-Dom, France, in an old collection preserved in the College of France.

Some of the trap dykes of the Lake Champlain region are camptonites. Others consist of monchiquite, fourchite or bostonite. All are described by Kemp and Marsters[15] in a recent Bulletin of the Survey

[13] Amer. Jour. Sci., XLVII, p. 473.

[14] Bull. Soc. Franc d. Min., XVII, p. 43.

[15] Bull. U. S. Geol. Surv., No. 107.